REMARKS

Introduction

Upon entry of the foregoing amendment, claims 1-10, 13, 16-19, 22, 25-30, 32, 34-36, 39, 42-45, 48, and 51-57 are pending in the application. Claims 1-9, 13, 16-18, 22, 25-30, 32, 34-35, 39, 42-44, 48, and 51-57 have been amended, and claims 11-12, 14-15, 20-21, 23-24, 31, 33, 37-38, 40-41, 46-47, and 49-50 have been cancelled. No new matter is being presented. In view of the following remarks, reconsideration and allowance of all the pending claims are requested.

Objections

Claim Objection

The Examiner has objected to claim 8 due to informalities. The amendments to claim 8 obviate the Examiner's objections thereto.

Rejection under 35 USC §103

I. Claims 1-3, 10-16, 19, 22, 25-29, 36-42, 45, 48, 51, 52, 56 and 57 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Mancini, et al. ("Robust quadtree-based disparity estimation for the reconstruction of intermediate stereoscopic images") (hereinafter "Mancini") and U.S. Patent No. 4,785,349 to Keith, et al. (hereinafter "Keith"). Applicant respectfully requests reconsideration of the subject claims for at least the reasons discussed below.

Claims 1, 16, 25-27, 42, and 51

In the Official Action, the Examiner cites Mancini as allegedly disclosing setting a plurality of thresholds and determining whether to split the macro blocks and setting a plurality of thresholds and determining whether to split the sub blocks. The Examiner relies specifically on section 6.5.1, paragraph 3, line 4 of the reference in which multiple threshold values are allegedly described with reference to determining whether intermediate block B_{ij} requires splitting. As stated in the section "Description of the Related Art" of the subject patent

application, it is a recognized shortcoming of Mancini that the same threshold criteria are imposed to evaluate blocks of different sizes. *See* Specification, paragraph [0020] – [0021]. That is, regardless of the number of iterations through steps 1-3 in section 6.5.1 of Mancini, the thresholds therein are not altered, and the same thresholds are applied to blocks even after blocks have been split, thereby resulting in image flicker. Nowhere in Mancini is there disclosure, teaching, or suggestion of, "setting a plurality of splitting threshold values to compare with a characteristic of a macro block in an image frame," and "setting a plurality of other splitting threshold values to compare with a characteristic of each sub block," as presently recited in independent claims 1 and 25, or of, "a macro block splitting determining unit that sets a plurality of macro block splitting threshold values for splitting a macro block in an image frame into sub blocks," and, "a sub block splitting determining unit that sets a plurality of sub block splitting threshold values for splitting each sub block into smaller sub blocks," as presently recited in independent claim 27. In Mancini, all threshold criteria are set without regard to differing characteristics of macro blocks and sub blocks. Moreover, since Mancini fails to disclose or suggest the threshold setting operations recited in the subject independent claims, "determining thereby whether to split the macro block into sub blocks," and "determining thereby whether to split each sub block into smaller sub blocks," as recited in claims 1 and 25, "determining therewith whether to split the macro block," and "determining therewith whether to split the sub block," as recited in claim 27, and "splitting macro image blocks each of left-eye views and right eye views into sub image blocks according to quadtree disparity estimation using a plurality of splitting threshold values," and "splitting each sub block into smaller sub blocks according to the quadtree disparity estimation using a plurality of other splitting threshold values," as presently recited in claim 51, are also not disclosed, taught, or suggested by the reference.

The Examiner acknowledges that Mancini fails to disclose that the determining whether to split the image block into sub blocks is performed by determining whether the image block has been split in a preceding frame at the same location. The Examiner then contends that Keith allegedly discloses where determining whether to split the macro block is done according to whether a preceding macro block at the same location in a preceding image frame as the current macro block has been split. The merits of Keith with regard to the preceding macro

block determining criteria are discussed below. However, it is respectfully submitted that Keith fails to disclose the shortcomings of Mancini with regard to implementing differing splitting threshold values and determining therewith whether macro blocks are to be split into sub blocks, and whether sub blocks are to be split into smaller sub blocks with other set threshold values. Thus, it is respectfully submitted that the subject claims are allowable over the cited prior art for that least the shortcomings of the cited prior art discussed above, and for the additional reason that the evidence set forth in the Official Action allegedly supporting the rejection under 35 USC § 103(a), i.e., Mancini, Keith, and the combination thereof, fails to disclose, teach or suggest the claimed subject matter as a whole. Accordingly, reconsideration and allowance of independent claims 1, 25, 27 and 51 are earnestly solicited.

As stated above, the Examiner cites Mancini as allegedly disclosing multiple splitting thresholds, but admits that the reference fails to disclose that the determining whether to split the macro block into sub blocks is performed by determining whether the macro block has been split in a preceding frame at the same location, and cites Keith as allegedly disclosing such. *See* Detailed Action, page 5, second paragraph. The Examiner takes the position that it would have been obvious at the time the invention was made "for the split condition of Mancini et al. to be determined using the inter-frame coding taught by Keith et al. ... 'for one need only code the differences rather than the absolute values' (Keith et al. at column 25, line 57)."

Applicant respectfully reminds the Examiner of MPEP § 2143, which states, in part, "[t]he key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit." The statement, "for one need only code the differences rather than the absolute values," is not only vague, but it fails to follow the Examiner's premise that modifying the splitting condition in Mancini with the inter-frame coding of Keith would have been obvious to the skilled artisan at the time of Applicant's invention. Applicant is unable to discern, for example, what "differences" discussed in Keith would be "coded," and how those differences would be encoded to achieve the Examiner's suggested modification of Mancini. As the Examiner may be aware, "rejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some

articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." KSR, 550 U.S. at ___, 82 USPQ2d at 1396. Accordingly, articulated reasoning to support the Examiner's conclusion, or absent such, withdrawal of the rejections, is respectfully requested.

In the Official Action, the Examiner takes the position that:

> Keith et al. discloses a system wherein the step of determining whether to split the macro block ("entire image area is selected as the target region. If this region cannot be adequately encoded it is split into sub-regions" at col. 26, line 51) is done according to whether a preceding macro block at the same location in a preceding image frame as the current macro block ("region of a previous frame **may be found that corresponds fairly well** to a region being coded in a current frame" at col. 25, line 55) has been split ("If the comparison indicates that this best choice for **a translated region** does not provide an acceptable match to the target region, the target region is checked for minimum size (3924). If the target region **is larger than the minimum size**, it is split" at col. 27, line 16) and the step of determining whether to split the sub block ("sub-regions which are subsequently examined for encoding" at col. 26, line 53) is done according to whether a preceding sub block at the same location in a preceding macro block as the current sub block ("region of a previous frame may be found **that corresponds fairly well** to a region being coded in a current frame" at col. 25, line 55) has been split ("If the comparison indicates that this best choice for **a translated region** does not provide an acceptable match to the target region, the target region is checked for minimum size (3924). If the target region is **larger than the minimum size**, it is split" at col. 27, line 16). (*See* Detailed Action, page 5, second paragraph; emphases added)

The excerpts from Keith quoted by the Examiner as set forth above do not articulate any reasoning to support a conclusion of obviousness, for at least the reason that the excerpts alone fail to explain how a "region of a previous frame may be found that corresponds fairly well," and a "best choice for a translated region," can be construed to correspond to a determination that a block at the same location in a preceding image frame has been split. To the contrary, the statements above make clear that the regions translate from frame to frame, and that "the same location" of a region is not the basis of any determination performed in Keith. Moreover, the splitting of blocks in Keith is not executed based on a determination of whether a block at a same location in a preceding image frame has been split, but rather is made according to size criteria of a coding target, as the quotations from Keith above clearly reveal.

In responding to Applicant's Remarks previously submitted in the Response of August 2, 2007, regarding Keith, the Examiner contends that:

> ...a target region that contains similarities to the previous region but is not similar enough and exceeds the minimum size threshold would be split. Blocks resulting from the split are then compared to a previous frame. A macroblock would best be matched by a corresponding unsplit macroblock but would be similar to a sub block containing similar image content as part of the current macroblock. Therefore, a close but not sufficient match of the current macroblock to the previous region is an indication that the previous image region had been split. (*See* Detailed Action, page 22).

Here, the analysis set forth in the Official Action appears to sidestep the fact that the best match in the encoding method of Keith is usually, and is expected to be, translated in a current frame from its original position in a previous frame, and not at the same location as in a previous image frame. Thus, whether the statement "[a] macroblock would best be matched by a corresponding unsplit macroblock but would be similar to a sub block containing similar image content as part of the current macroblock," supports a conclusion that "a close but not sufficient match of the current macroblock to the previous region is an indication that the previous image region had been split," is immaterial to the present patentability analysis, since the Examiner's reasoning fails to support "determining whether a macro block at a same location in a preceding image frame has been split," as presently recited in independent claims 16, 26, and 42. Thus, it is respectfully submitted that the subject claims are allowable over the cited prior art for that least the reasons that the cited prior art discussed above fall short of disclosing, teaching, or suggesting the recitations of the subject claims, and for the additional reason that the evidence set forth in the Official Action allegedly supporting the rejection under 35 USC § 103(a), i.e., Mancini, Keith, and the combination thereof, fails to disclose, teach or suggest the claimed subject matter as a whole. Accordingly, reconsideration and allowance of independent claims 16, 26 and 42 are earnestly solicited.

Claims 2-3, 10-15, 19, 22, 28-29, 36-41, 45, 48, 52, 56 and 57

Dependent claims 2-3, 10, 13 incorporate all of the recited operations of independent claim 1, dependent claims 19, and 22 incorporate all of the recited operations on independent claim 16, dependent claims 28-29, 36, and 39 incorporate all of the recited elements of

independent claim 27, dependent claims 45 and 48 incorporate all of the recited elements of independent claim 42, dependent claim 52 incorporates all of the recited operations of independent claim 25, and dependent claims 56 and 57 incorporate all of the recited operations of independent claim 51. Applicant respectfully reminds the Examiner that, "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." *In re* Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Thus, the subject dependent claims are nonobvious for at least the same reasons for which the respective independent claims are nonobvious. Accordingly, reconsideration and allowance of dependent claims 2-3, 10, 13, 19, 22, 28-29, 36, 39, 45, 48, 52, 56 and 57 are earnestly solicited.

II. Claims 4-9, 17, 18, 20, 21, 23, 24, 30-35, 43, 44, 46, 47, 49, 50 and 53 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Mancini and Keith as applied to claims 1 and 27, and further in view of U.S. Patent No. 5,208,673 to Boyce (hereinafter "Boyce"). Dependent claims 2-9 incorporate all of the recited operations of independent claim 1, dependent claims 17, and 18 incorporate all of the recited operations on independent claim 16, dependent claims 30, 32, 34, and 35 incorporate all of the recited elements of independent claim 27, and dependent claims 43, 44, and 53 incorporate all of the recited elements of independent claim 42. In that Boyce was cited as allegedly disclosing features recited in the subject claims that are lacking in both Mancini and Keith, but Boyce fails to disclose the shortcomings of both Mancini and Keith with respect to the recitations of the independent claims, the subject claims that are still pending are allowable over Mancini, Keith, Boyce, and the combination of references. Thus, the subject dependent claims are nonobvious for at least the same reasons for which the respective independent claims are nonobvious. Accordingly, reconsideration and allowance of dependent claims 2-3, 10-15, 19, 22, 28-29, 36-41, 45, 48, 52, 56 and 57 are earnestly solicited.

III. Claim 54 and 55 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Mancini and Keith as applied to claim 42, and further in view of common knowledge in the art. Dependent claims 54 and 55 incorporate all of the recited operations of independent claim 42. The Examiner's Official Notice of knowledge in the art was cited as allegedly disclosing features recited in the subject claims that are lacking in both Mancini and

Keith, but fails to account for the shortcomings of both Mancini and Keith with respect to the recitations of independent claim 42. Thus, the subject claims are allowable over Mancini, Keith, the Examiner's Notice, and the combination thereof. Accordingly, reconsideration and allowance of dependent claims 54 and 55 are earnestly solicited.

Conclusion

It is respectfully submitted that a full and complete response has been made to the outstanding Office Action and, as such, there being no other objections or rejections, this application is in condition for allowance, and a notice to this effect is earnestly solicited.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided below.

If any further fees are required in connection with the filing of this amendment, please charge the same to out Deposit Account No. 502827.

Respectfully submitted,

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